

CLAIMS

WHAT IS CLAIMED IS:

1. A method of managing a plurality of data storage media, each of said
5 media being designatable as being in a writeable state or a non-writeable state, said
method comprising:

designating a quantity of said plurality of media as being in the
writeable state, said quantity being equal to a concurrency value;

determining that none of the media designated in the writeable
10 state has sufficient space to store specified data;

designating an additional one of said plurality of media as being
in the writeable state whereby the aggregate number of media in the writeable state
exceeds said concurrency value; and

writing said specified data to the additional medium.
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2. The method of claim 1, wherein said determining act comprises:

retrieving, from a database, a record corresponding to each
medium in the writeable state, said database storing a record corresponding to each of
said media that is in either the writeable state or the non-writeable state, each of said
20 records indicating for each medium that is in the writeable state the amount of space
available for writing on said medium; and

comparing the amount of free space indicated by each record with
the size of said specified data.

3. The method of claim 2, wherein said plurality of media includes one
25 or more non-designated media that are not in either the writeable state or the non-
writeable state, and wherein said database does not contain entries for said non-
designated media.

4. The method of claim 1, wherein said plurality of media are mountable on one or more drives, said drives being associated with a device, said device having a library which stores media and a robotic mechanism which mounts media stored in said library on said drives, and wherein said determining act comprises:

determining that none of said plurality of media in the writeable state located within said device has sufficient space to store said specified data; and

determining that none of said plurality of media located outside of said drive is in the writeable state.

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5. The method of claim 1, wherein said plurality of media are mountable on one or more drives, said drives being associated with a device, said device having a library which stores media and a robotic mechanism which mounts media stored in said library on said drives, and wherein said determining act comprises:

determining that none of said plurality of media in the writeable state located within said device has sufficient space to store said specified data;

identifying a first medium located outside of said device, the identified medium being in the writeable state;

determining that an amount of time has passed without the identified medium having been placed in said device;

re-evaluating said plurality of media; and

determining, based on the re-evaluation, that none of said plurality of media in the writeable state has sufficient space to store said specified data.

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6. The method of claim 1, wherein said plurality of media comprise double-sided media, each side of the double-sided media being separately designatable as being in a writeable state or a non-writeable state, and wherein said determining act comprises:

determining that no side of said plurality of media is in the writeable state and has sufficient space to store said specified data; and wherein said designating act comprises:

identifying one of said double-sided media having a first side in the non-writeable state and having a second side whose state has not been designated; and

designating said second side as being in the writeable state.

7. The method of claim 1, wherein said concurrency value is equal to a number of drives that are available for the migration of data.

8. The method of claim 1, wherein said specified data comprises a plurality of data objects, and wherein said method further comprises persisting in a memory the locations on which each of said data objects is stored.

9. The method of claim 8, wherein each of said data objects is a file stored in a file system, and wherein said persisting act comprises:

setting a reparse point in said file system for each of the files; and storing the location of each migrated file in the reparse point corresponding to the migrated file.

10. The method of claim 1, further comprising:

identifying one or more data objects to be stored on said media.

11. A computer-readable medium having computer-executable instructions to perform the method of claim 1.

12. A method of using a plurality of media for a data migration system, each of said media being designatable as being in a writeable state or a non-writeable state, said method comprising:

receiving a request to migrate a quantity of data;

5 identifying, from among said plurality of media, a set of media that are in the writeable state and that have sufficient space to store said quantity of data;

determining that each of the media in said set is in use for the reading or writing of data;

10 determining that the number of said plurality of media in the writeable state is greater than or equal to a first number;

waiting for a medium from said set to become available; and

writing said data to the available medium.

15 13. The method of claim 12, wherein said first number is equal to a number of drives associated with said system that are available for the migration of data, the number of drives available for migration being less than or equal to the total number of drives associated with the system.

20 14. The method of claim 12, wherein said data comprises a plurality of data objects, and wherein said method further comprises persisting in a memory the locations to which each of said data objects has been migrated.

25 15. The method of claim 14, wherein said location comprises an identifier which identifies said medium and an offset from a specified location on said medium.

16. The method of claim 14, wherein each of said data objects is a file stored in a file system, and wherein said persisting act comprises:

setting a reparse point in said file system for each of the migrated files; and

5 storing the location of each migrated file in the reparse point corresponding to the migrated file.

17. The method of claim 12, wherein said data migration system includes a device having one or more drives which read and write said plurality of media, a library for the storage of media, and a robotic mechanism which mounts media stored
10 in said library on said drives, said method further comprising:

determining that none of the media located in said library is in the writeable state.

18. The method of claim 12, wherein said data migration system includes a device having one or more drives which read and write said plurality of media, a library for the storage of media, and a robotic mechanism which mounts media stored
15 in said library on said drives, said method further comprising:

determining that none of said plurality of media located outside of
20 said device is in the writeable state.

19. A computer-readable medium having computer-executable instructions to perform the method of claim 12.

20. A method of using a plurality of double-sided media for a data migration system, each side of said media being designatable as being in a writeable state or a non-writeable state, said method comprising:

receiving a request to migrate a quantity of data;

identifying, from among said plurality of media, a first set of media having a side in the writeable state and whose side in the writeable state has sufficient space to store said quantity of data;

determining that each of said media in said first set is in use for
5 the reading or writing of data;

identifying a first one of said plurality of media which is not in use for the reading or writing of data, and which has a first side that is in the non-writeable state and a second side whose state is not designated;

designating said second side of said first medium as being in the
10 writeable state; and

writing said data to said second side of said first medium.

21. The method of claim 20, further comprising:

determining that the aggregate number of sides of said plurality of
15 media that are in the writeable state is less than a first number;

22. The method of claim 21, wherein said first number is equal to a number of drives associated with said system that are available for the migration of data.

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23. The method of claim 20, wherein said data migration system includes a device having one or more drives which read and write said plurality of media, a library for the storage of media, and a robotic mechanism which mounts media stored in said library on said drives, said method further comprising:

25 identifying, from among said plurality of media, a second set of media having a side in the writeable state and whose side in the writeable state has sufficient space to store said quantity of data, said second set being different from said first set; and

determining that each of said media in said second set is not located in said device.

24. A computer-readable medium having computer-executable
5 instructions to perform the method of claim 20.

25. A method of storing a quantity of data on one of a plurality of media,
each of said media being designatable as being in a writeable state or a non-writeable
state, said method comprising:

10 determining that the number of said media in a writeable state is
greater than or equal to a first number;

determining whether any of said media in a writeable state have
sufficient space to store said data;

15 if any of said media in a writeable state have sufficient space to
store said data, writing said data to a first of said media in the writeable state; and

if none of said media in said writeable state have sufficient space
to store said data:

identifying a second medium, said second medium not
being designated as being in either the writeable state or the non-writeable state;

20 designating said second medium as being in the writeable
state; and

writing said data to said second medium.

26. The method of claim 25, further comprising:

25 determining that said first medium is presently in use for the
reading and writing of data; and

waiting for said first medium to become available prior to writing
said data to said first medium.

27. The method of claim 26, wherein said media are mountable on one or more drives, said drives being associated with a device, said device having a library which stores media and a robotic mechanism which mounts media stored in said library
5 on said drives, wherein said method further comprises:

determining that said first medium is not stored in said library;
and wherein said waiting act comprises:

prompting a user to insert said first medium in said device.

10 28. The method of claim 26, wherein said first medium is presently in use for the reading or writing of data, and wherein said waiting act comprises:

waiting for said use to complete.

15 29. The method of claim 25, wherein said media comprise double-sided media, each side of said media being designatable as being in a writeable state or a non-writeable state, wherein said second medium comprises the second side of a medium having a first and a second side, said first side being in the non-writeable state and said second side not being designated as being in either the writeable or non-writeable state.

20 30. The method of claim 25, wherein said first number comprises a number of drives available for writing data onto media.

31. A computer-readable medium having computer-executable instructions for performing the method of claim 25.

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32. A system for storing data on media comprising:

a media management module which communicates with a database that stores attributes of a plurality of media, and which selects media for

writing in accordance with the attributes stored in said database, said media management module including logic which selects said media based on a concurrency value; and

5 a migration module which communicates with a storage device, said storage device including a plurality of drives which write data to said media, said migration module receiving an indication of a selected medium from said media management module and writing data to the selected medium using said storage device.

33. The system of claim 32, further comprising:

10 a selection module which communicates with a data object storage system and which selects data objects from said data object storage system to be written to said media.

34. The system of claim 32, wherein said selection module selects data
15 objects based on the time said data objects were most recently accessed.

35. The system of claim 32, further comprising:

a persistence module which receives from said migration module the location at which said data is stored on said media, and which stores the location of
20 said data in a memory location.

36. The system of claim 35, wherein said data object storage system comprises a settable reparse point for each data object stored in said data object storage system, each of said reparse points comprising a reparse data location, wherein said
25 memory location comprises at least one of the reparse data locations.

37. The system of claim 32, wherein said concurrency value is equal to the number of drives in said storage device.

38. The system of claim 32, wherein said plurality of media comprise double-sided media, each side of said media being designatable as being in either a writeable state or a non-writeable state, wherein said media management module further
5 comprises logic which selects a medium based which of said plurality of media has a side in the non-writeable state.

39. The system of claim 32, wherein said storage device comprises a library which stores media and a robotic mechanism which mounts media stored in said
10 library on said drives, and wherein said media management module further comprises logic which selects a medium based on which of said plurality of media is located in the library.

40. A system for migrating data to media comprising:
15 selection means for selecting data to be written to media;
first data storage means for storing attributes of said media, said attributes including whether each medium is allocated for writing, whether each medium is double-sided, and whether each medium is robotically accessible;
second data storage means for storing concurrency information;
20 media management means for choosing a medium to which to write the selected data based on said attributes and said concurrency information; and
transferring means for transferring the selected data to the chosen media.